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09/674,825	12/18/2000	Karina Rozhetsky	1659/3	5255

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EXAMINER

ZALUKAEVA, TATYANA

ART UNIT PAPER NUMBER

1713

DATE MAILED: 05/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/674,825

Applicant(s)

ROZHETSKY, KARINA

Examiner

Tatyana Zalukaeva, PhD

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim1-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- The recited "...thereby obviating the need for dispersing the carboxyl cationite in a dispersing medium." Is indefinite, because first of all it is a negative limitation, which does not limit the steps of the process, as claimed, and second, it is unclear, why just adding the initiator to the mixture allows to avoid the use of a **step** of dispersing medium.
- The recited "first solvent" and "first mixture", as per claim 1 constitutes an indefinite subject matter, because there is no further indication of second solvent and/or second mixture, etc.
- The recited "from about 0.5N to about 1N sodium hydroxide of pH 8" as per claim 15 (ii) is indefinite, because pH of sodium hydroxide will be varied with the change of its normality.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuznetsova et al (U.S. 4,120,831).

Kuznetsova discloses a process for producing carboxyl cationites. In terms of the steps of the process they are:

a) dissolving comonomers, such as acrylic acid, methacrylic acid and vinyl containing amide, such as vinyl-containing amide such as hexahydro-1,3,5-triacryloyltriazine, N, N'-methylenediacrylamide, N,N'-ethylenedimethacrylamide or N, N'-hexamethylenedimethacrylamide as well as an initiator of radical polymerization in a 5-50% acetic acid. Weight ratio between the unsaturated carboxylic acid and vinyl-containing amide is varied from 3:1 to 12:1; concentration of said comonomers in a 5-50% acetic acid is varied within the range of from 10 to 30%. The resulting reaction mixture is dispersed in polyethylsiloxane or polymethylphenylsiloxane liquid at a weight ratio

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between the reaction mixture and said silicone liquid ranging from 1:3 to 1:5 respectively. Thereafter, copolymerization is effected in a suspension at a temperature ranging from 20-100°C (see abstract).

In some embodiments the reaction mixture prior to its dispersion is prepolymerized at temperatures 20-25°C, thus performing the polymerization without the use of a dispersing medium. (col. 3, lines 25-31).

Among other initiators it is advisable according to Kuznetsova to use ammonium persulfate ascorbic acid (col. 3, lines 32-36).

In order to produce **carboxyl cationites** with maximal pore dimensions while retaining the necessary hydrodynamic properties, Kuznetsova employs a 5 to 20% acetic acid at the concentration of comonomers in the latter equal to 20%. Furthermore, the use of acetic acid of a 5-20% concentration as a solvent for the starting comonomers makes it possible to produce carboxyl cationites possessing an insignificant change of volume in the swollen state (by 1.2-1.8 times) when transformed from the hydrogen form into the hydrogen-sodium form upon changing the pH value from 4 to 7, i.e. under the conditions of the sorption-desorption process (col. 3, lines 14-25).

Although Kuznetsova uses the dispersing medium in some embodiments, she describes the **prepolymerization**, wherein the polymer is used under the conditions identical to those instantly claimed out of comonomers, as instantly claimed **prior to** using the dispersing medium.

Furthermore, the language of claim 1 states "obviating the **need** (emphasis added-T.Z.) for dispersing..." and at the same time utilizes the open language in a transitional phrase in a preamble "comprising". The transitional term "comprising", which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. See, e.g., *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) ("Comprising" is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.); *Molecular Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948).

5. Claims 1-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Bolto et al (U.S. 3,941,724).

Bolto discloses manufacturing an amphoteric polymeric composition which process comprises firstly polymerizing a mixture comprising a monomer containing a basic group and a monomer containing an acidic group, in the presence of a solvent system comprising formic acid (see abstract). Preferably the third monomer is difunctional and acts as a crosslinking agent, leading to extension of the polymeric network. Suitable crosslinking agents are, for example, ethylene glycol dimethacrylate, 1,3-butylene glycol dimethacrylate, divinylbenzene, **triallyl cyanurate**, the triallyl ether of pentaerythritol and the like (col. 7, lines 22-30).

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The process of Bolto can be carried out with the use of another solvent in addition to a formic acid, such solvents as water, ethanol, methanol, propanol, dimethylformamide, etc, the list of solvents is given in col. 2, lines 42-50 and col. 4, lines 60-62.

Among preferred cationic monomers are acrylic and methacrylic acid (col.3, line 60). Free radical initiators are utilized to initiate the polymerization , such initiators include potassium persulfate, different peroxides and azocompounds, the list of those is presented in col. 4, lines 49-68) . After polymerization takes place grinding and sieving is performed (col. 5, lines 44-46). Following polymerization and washing to remove low molecular weight material, it is preferable to subject the product resin in particulate form to a pH equilibration treatment to achieve the optimum ion-exchange performance. Normally, this simply involves stirring the resin in an aqueous salt solution at room temperature and adding sodium hydroxide until the desired pH level is obtained, care being taken to ensure that the final equilibrium salt concentration employed is that of the water to be treated by the desalination process. For purposes of evaluation, however, the resin may be washed with hot water to obtain it in a regenerated form, and the amount of salt taken up by stirring the regenerated resin in salt solution at room temperature used as a measure of the effective capacity of the system. The time necessary to achieve salt uptake equivalent to 50% of the equilibrium level (the "half time") may be used as a convenient measure of the rate of salt adsorption (col. 6, lines 17-38).

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With specific regard to a polymerization in the presence of acetic acid in lieu of formic acid Bolto carries out such experiment in order to evaluate the effective capacity of a resin obtained in the presence of other solvents , such as acetic acid (see Table in Example 2, col. 8). Therefore, the use of acetic acid as a major component (in lieu of formic acid) is also described by Bolto.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over SU 499276 in view of Kuznetsova.

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SU'276 discloses copolymers of acrylic acid (I) and methylenebisacrylamide (II) or hexahydro-1,3,5-triacryloyltriazine (III) in aqueous solution at the concentration of starting monomers 10-30% weight, in the presence of a free radical initiator, preferably potassium persulfate-sodium hyposulfite. The ratios of comonomers are (I) : (II) 23:2-24:1 and (I) : (III) 23:2 – 49:1. Reaction temperature is 10-20°C. Reaction time is about 2 hours.

SU'276 differs from the instant claims by performing its copolymerization in an aqueous solution instead, for example aqueous solution of acetic acid, as instantly claimed.

As discussed above, Kuznetsova performs polymerization of the same comonomers, with essentially the same initiation systems for the purpose of further producing carboxyl cationites. The polymerization of Kuznetsova takes place in a 5-50% of acetic acid.

Since both Kuznetsova and SU'276 produce identical polymers using identical techniques, one skilled in the art would have found it obvious to utilize an acetic acid/water polymerization medium of Kuznetsova in lieu of aqueous solution of SU'276 to ensure the production of carboxyl cationites, which exhibit very little change of volume in a swollen state and thus to arrive at the instant claims.

Conclusion

9. Other prior art listed in PTOL –892 shows the general state of the art.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tatyana Zalukaeva, PhD whose telephone number is (703) 308-8819. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (703) 308-2450. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



TZ
May 15, 2002

Tatyana Zalukaeva, PhD
Examiner
Art Unit 1713